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Abstract of the paper of the Food and Agriculture Organization of the United Nations

1. The Food and Agriculture Organization of the United Nations (FAO) was founded in October 1945 with a mandate to raise levels of nutrition and standards of living, to improve agricultural productivity and to better the conditions of rural populations. Today, FAO is the largest autonomous specialized agency within the United Nations system with 174 member countries and the European Union as member organization.

2. A specific priority of the Organization is promoting and supporting sustainable agriculture and rural development, a long-term strategy for the conservation and management of natural resources. It aims to meet the needs of both present and future generations through programmes that do not degrade the environment and are technically appropriate, economically viable and socially acceptable.

3. In November 1996, FAO convened the first World Food Summit, which resulted in a comprehensive World Food Summit Plan of Action, aiming at reducing the present number of malnourished people in the world by half by the year 2015. One of the key instruments of the Plan of Action is the FAO Special Programme for Food Security, which draws its defined overall objective of improving food security in low-income food-deficit countries from Agenda 21, which was adopted unanimously by the countries of the world at the United Nations Conference on Environment and Development in June 1992.

4. Currently, FAO is developing a Strategic Framework 2000-2015 to guide the work of the Organization in the medium and longer term. Systematic collection, analysis, interpretation and dissemination of information relating to nutrition, food and agriculture, including environment and natural resource management, is a key priority of the strategic framework.

5. FAO started to use space technology applications in the early 1970s by introducing remote sensing technologies in its projects and programmes when the Organization formally created a Remote Sensing Unit. In 1980, following a recommendation from the Committee on the Peaceful Uses of Outer Space, endorsed by the General Assembly, the FAO Remote Sensing Centre was formally established with responsibility for remote sensing applied to renewable natural resources within the United Nations system.

6. Within the mandate of its regular and field programmes, FAO has developed a wide variety of activities in which remote sensing, Geographic Information System (GIS) and communication technologies at present play an integral and key role.

7. In the field of environmental monitoring, FAO has since 1988 operated the Africa Real-Time Environmental Monitoring Information System (ARTEMIS) in the context of its Global Information and Early Warning System (GIEWS) on Food and Agriculture and the Emergency

Centre for Locust Operations (ECLO), based on the use of data from Meteosat, the Advanced Very High Resolution Radiometer of the National Oceanic and Atmospheric Administration (NOAA-AVHRR) of the United States of America, the Système pour l'observation de la Terre (SPOT)-4 VEGETATION and geostationary meteorological satellites. ARTEMIS data are being used operationally at the regional and national levels in the countries of the southern Africa region through cooperation with the Southern African Development Community.

8. FAO also operates the AFRICOVER project, which aims to establish a digital land-cover database for selected subregions of Africa and which has been operational since 1995 in the east African region. Through the project, a land-cover classification system was developed by FAO and disseminated for wider use by member States.

9. Together with the World Bank, FAO is implementing a regional project in central Africa, the Regional Environmental Information Management Project for Central Africa. This project aims at improving and strengthening of planning and management of natural resources in the countries of the Congo Basin by providing the various stakeholders with appropriate environmental information.

10. In cooperation with a number of partners and with financial support from the European Union, FAO designed an Integrated Coastal Analysis and Monitoring System. That System will support the management of coastal area ecosystems through the monitoring of water quality and coastal resource distribution and usage parameters from multiple Earth observation data such as satellite data from SeaWIFS and future ENVISAT sensors and *in situ* measurements.

11. Following the successful completion of Phases I and II of the FAO/United States Agency for International Development project on the monitoring, forecasting and simulation of the Nile River, FAO is currently implementing Phase III of the project during 1997-1999 to assist the Government of Egypt in consolidating the results achieved in the earlier phases. Phase III of this project is to consolidate further the Nile River monitoring and forecasting system; the related control/decision support system has been approved and implementation commenced in 1998.

12. The 1990 Forest Resources Assessment project of the Forestry Department of FAO, a global survey of forest resources, demonstrated that, with the help of remote sensing, information on changes in forest and land use could be obtained on a global basis in a cost-effective, timely and statistically sound manner. FAO is currently preparing for a global forest resource assessment for the year 2000 that will make intensive use of remote sensing and GIS, ranging from coarse-resolution global coverage for land-cover mapping to high and very high resolution multi-date satellite imagery for surveys of global and regional forest/land-cover changes.

13. With the Government of the Netherlands, FAO is developing the Forest Assessment and Monitoring Environment concept. This programme aims at defining, developing and implementing a dedicated operational end-to-end satellite remote sensing capacity to provide real-time access to appropriate spatial data for supporting sustainable forest management at the subnational level.

14. FAO has a long history of involvement with climate-related activities through cooperation with the Word Meteorological Organization (WMO). Currently, the main activities on agroclimatic databases and agrometeorology, using data both from satellites and *in situ* observations, include: (a) management of the climatic database for about 25,000 stations worldwide (FAOCLIM); (b) production of digital maps (at various levels) based on the climatic database; (c) compilation of a database of African subnational crop statistics (AGDAT); (d) real-time monitoring of food crop conditions and yield forecasting, in particular for African countries; and (e) fulfilment of specific requests that require the analysis of

climatic data to be integrated with socio-economic variables. Together with ARTEMIS, AGROMET is providing essential value-added analysis and related information products for the Organization's operational GIEWS.

15. Through its Environment and Natural Resources Service in the Sustainable Development Department, FAO is actively promoting operational use of remote sensing and related information technology in both its normative and field programmes for environmental and natural resource management and conservation in the context of sustainable agriculture and rural development of its member countries. The Service is currently backstopping some 65 projects that have remote sensing, GIS and information management components in more than 50 member States.

16. Within its strategic framework, FAO has given high priority to developing partnerships with interested international organizations, United Nations agencies and governmental institutions for the development of information bases and decision support tools to address needs in the implementation of Agenda 21 and international environmental agreements and conventions, such as the conventions on biological diversity, desertification and climate change.

17. FAO is, jointly with the International Council for Science, the United Nations Environment Programme, the United Nations Educational, Scientific and Cultural Organization and WMO, a founding member of the Global Terrestrial Observing System and also hosts the secretariat of the System. The central mission of the System is to provide policy makers, resource managers and researchers with decision support tools and access to the data needed to detect, quantify, locate, understand and warn of changes (especially reductions) in the capacity of terrestrial ecosystems to support sustainable development.

18. As a major user of the Earth observation data, FAO has been participating in the work of the Committee on Earth Observation Satellites as an associate member. FAO is also working closely with other partners within the United Nations system and other international organizations on the development of an Integrated Global Observing Strategy.

19. FAO is also developing active partnerships with the European Union, the Joint Research Centre of the European Union, the National Aeronautics and Space Administration and NOAA of the United States of America, the European Organization for the Exploitation of Meteorological Satellites and the European Space Agency on the development and operational use of new satellite data sources with a view to improving its information services and to broadening the group of users, both at FAO headquarters and in the field. FAO is also developing cooperation with educational institutions with the objective of responding to the training needs of developing countries in relation to natural resource management and environmental monitoring, and distance education. FAO is also actively involved in helping member countries strengthen their capacity to develop distance learning programmes using various means, including satellite communications systems. FAO provides technical advice to member countries in establishing distance education centres and developing course programmes.

20. Increasingly involved in information and communication technologies, FAO is moving progressively into the digital age by developing the World Agricultural Information Centre (WAICENT) and various corporate digital spatial databases (http://www.fao.org/waicent). FAO information materials and publications relating to space applications, including remote sensing, GIS, agrometeorology, environment and energy, as well as education and communications, can be found on the Web site of the Sustainable Development Department, "Sustainable Development Dimensions" (http://www.fao.org/sd (environmental information/resources)).